

AMENDMENTS TO THE CLAIMS

This listing of the claims replaces all prior listings and versions:

1. (original): A method to derive quantitative information on bone structure from a dental x-ray image comprising:
 - (a) obtaining a dental x-ray image, wherein the dental x-ray image includes (i) at least a portion of the maxilla or mandible and (ii) an external standard for determining bone structure; and
 - (b) analyzing the image obtained in step (a) to derive quantitative information on bone structure.
2. (original): The method of claim 1, wherein the external standard comprises a calibration phantom that projects free of the mandible or maxilla.
3. (original): The method of claim 2, wherein the calibration phantom comprises geometric patterns.
4. (original): The method of claim 3, wherein the geometric patterns are plastic or metal.
5. (original): The method of claim 4, wherein the geometric patterns are metal powder.
6. (original): The method of claim 1, wherein step (b) comprises analyzing the image using one or more computer units.
7. (original): The method of claim 6, wherein the analysis comprises identifying a region of anatomical interest in the image.
8. (original): The method of claim 7, wherein the region of anatomical interest is in the mandible or the maxilla.
9. (original): The method of claim 7, wherein the region of anatomical interest is a tooth.

10. (original): The method of claim 1, wherein the method further comprises analyzing the image to obtain information on bone mineral density.

11. (original): The method of claim 10, wherein the computer unit identifies structural or density information at a specified distance from the region of anatomical interest.

12. (original): The method of claim 10, wherein the computer unit identifies areas in the image having selected structural or density characteristics.

13. (original): The method of claim 12, wherein the selected density characteristic comprises the area of the image having the highest density.

14. (original): The method of claim 12, wherein the selected density characteristic comprises the area of the image having the lowest density.

15. (original): The method of claim 12, wherein the selected structural characteristic is selected from the group consisting of trabecular thickness; trabecular spacing; two-dimensional or three-dimensional spaces between trabecular; two-dimensional or three-dimensional architecture of the trabecular network.

16. (original): The method of claim 1, wherein step (a) further comprises providing a hygienic cover adapted to receive the external standard.

17. (original): The method of claim 16, wherein the hygienic cover is radiolucent.

18. (original): The method of claim 16, wherein the hygienic cover is disposable.

19. (original): The method of claim 16, wherein the hygienic cover is sterilizable.

20. (original): The method of claim 16, wherein the external standard is integrated into the hygienic cover.

21. (original): The method of claim 16, wherein the external standard is temporarily attached to the hygienic cover while obtaining the image.

22. (original): The method of claim 16, wherein the hygienic cover further comprises a bolus in the path of the x-ray beam.

23. (original): The method of claim 22, wherein the bolus is water-filled.

24. (original): The method of claim 22, wherein the bolus is integrated into the hygienic cover.

25. (original): The method of claim 22, wherein the bolus is temporarily attached to the hygienic cover.

26. (original): The method of claim 6, wherein the computer unit includes one or more correction factors.

27. (original): The method of claim 26, wherein the correction factors account for variation in soft-tissue thickness.

28. (original): The method of claim 1, wherein obtaining the dental x-ray image further comprises compressing soft tissue in the image to a selected thickness.

29. (original): The method of claim 1, wherein the x-ray image is an x-ray film.

30. (original): The method of claim 16, wherein the hygienic cover is further adapted to receive x-ray film.

31. (original): The method of claim 1, wherein the image is obtained digitally.

32. (original): The method of claim 31, wherein the digital image is obtained using a selenium detector system or a silicon detector system.

33 to 41. (canceled).

42. (original): An x-ray assembly for determining bone mineral density or bone structure comprising

(a) a hygienic cover;
(b) x-ray film and
(d) a calibration phantom comprising at least one marker positioned in an area of known density or structure.

43. (original): The assembly according to claim 42, wherein the hygienic cover is disposable.

44. (original): The assembly according to claim 42, wherein the hygienic cover is sterilizable.

45. (original): The assembly according to claim 42, wherein the calibration phantom is integrated into the hygienic cover.

46. (original): The assembly of claim 42, wherein the assembly further comprises an x-ray film holder and the calibration phantom is temporarily attached to the x-ray film holder or to the hygienic cover.

47. (original): The assembly of claim 42, wherein the calibration phantom comprises a plurality of geometric patterns that serve as a reference for bone structure characteristics.

48. (original): The assembly of claim 47, wherein the bone structure characteristics are selected from the group consisting of trabecular thickness; trabecular spacing; two-dimensional or three-dimensional spaces between trabecular; two-dimensional and three-dimensional architecture of the trabecular network.

49. (original): The assembly of claim 47, wherein the geometric patterns are made of metal, metal powder or plastic.

50. (original): The assembly of claim 47, wherein the marker is a geometric pattern selected from the group consisting of circles, stars, squares, crescents, ovals, multiple-sided objects, irregularly shaped objects and combinations thereof.

51. (original): The assembly of claim 42, wherein the film is integral to the hygienic cover.

52. (original): The assembly of claim 42, wherein the calibration phantom is integral to the x-ray film.

53. (original): The assembly of claim 52, wherein the calibration phantom is included between two of the physical layers of the x-ray film.

54. (original): The assembly of claim 52, wherein the calibration phantom is included within one of the physical layers of the x-ray film.

55. (original): The assembly of claim 42, wherein the hygienic cover further comprises a bolus.

56. (original): The assembly of claim 55, wherein the bolus is integral to the hygienic cover.

57. (original): The assembly of claim 55, wherein the bolus is temporarily attached to the hygienic cover.

58. (original): The assembly of claim 42, wherein the calibration phantom is adapted to fit over one or more teeth.

59. (original): The assembly of claim 58, wherein the calibration phantom is V-shaped or U-shaped.

60. (canceled).

61. (original): A kit comprising a hygienic cover; a calibration phantom for bone structure or bone density comprising an integrated geometric pattern; an x-ray imaging assembly and computer programs, wherein said computer programs analyze and assess bone mineral density or bone structure.

62. (original): A method of diagnosing a bone condition comprising analyzing a dental x-ray obtained by the method of claim 1.

63. (original): The method of claim 62, wherein the condition is osteoporosis.

64. (original): A method of treating a bone condition comprising diagnosing the condition according to the method of claim 52, and administering a suitable treatment.

65. (original): The method of claim 64, wherein the condition is osteoporosis.

66. (original): The method of claim 65, wherein the treatment comprises administering an anti-resorptive agent or an anabolic agent.

67. (original): An x-ray assembly for determining bone mineral density or bone structure comprising

- (a) a hygienic cover;
- (b) x-ray film and

(d) a calibration phantom for measuring bone mineral density or structure or combinations thereof.

68. (original): The assembly according to claim 67, wherein the hygienic cover is disposable.

69 to 84. (canceled).